

LISTING OF CLAIMS

The listing of claims provided below replaces all prior versions, and listings, of claims in the application.

- 5 1. (Currently amended) A method comprising:
- obtaining image data on a server, the image data defining a single complete image ~~having a horizontal extent and a vertical extent when~~ to be rendered in a window on a display;
- clipping said image data on said server to obtain clipped image data that will be
- 10 visible when rendered in the window on the display, the clipped image data representing a spatial portion of the single complete image ~~when rendered in the display~~;
- transmitting said clipped image data from a transmitter on said server via a computer network without conversion to a receiver on a client; and
- said receiver scaling said clipped image data for display.
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2. (Currently amended) The method of Claim 1, wherein clipping said image data further comprises:
- obtaining by said server a clip-list specifying at least one clipping region that will be visible when rendered in the window on the display, the at least one clipping region
- 20 defining a spatial portion of the single complete image ~~having the horizontal extent and the vertical extent~~; and
- mapping by said server of said at least one clipping region to said image data to determine said clipped image data.

3. (Original) The method of Claim 2, wherein mapping comprises:
determining a nearest pixel in said image data to a location in said at least one clipping
region.

5 4. (Original) The method of Claim 3, wherein determining a nearest pixel is
based on a Euclidean distance.

5. (Original) The method of Claim 3, wherein said clipping region comprises
a rectangle and said location comprises a corner of said rectangle.

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6. (Previously amended) The method of Claim 3, wherein said clipped image
data are further compressed, wherein said clipped and compressed image data comprises
one or more subsampled chroma components and one or more differentiated and
quantized luma components, and wherein determining said nearest pixel further
15 comprises:

determining a plurality of pixels that comprise samples from said one or more
subsampled chroma components and values from said one or more differentiated and
quantized luma components; and

determining said nearest pixel from said plurality of pixels.

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7. (Original) The method of Claim 2, wherein said at least one clipping
region comprises a plurality of clipping regions, and wherein mapping comprises
mapping said plurality of clipping regions to a plurality of regions of image data.

8. (Previously amended) The method of Claim 7, wherein transmitting comprises individually transmitting said plurality of clipping regions of image data.

9. (Previously amended) The method of Claim 7, wherein scaling comprises
5 independently scaling up said plurality of regions of image data by said client to fill respective regions of a display.

10. (Previously amended) The method of Claim 9, wherein said independently scaling said plurality of regions of image data comprises applying
10 independent scale factors that reduce scaling along a horizontal axis and increase scaling along a vertical axis.

11. (Currently amended) A computer program product comprising:
a computer usable medium having computer readable code embodied therein for
15 processing image data, said computer program product comprising:

computer readable code configured to cause a server to obtain image data, the image data defining a single complete image ~~having a horizontal extent and a vertical extent when to be rendered in a window on a display;~~

computer readable code configured to cause said server to clip said image data to
20 obtain clipped image data that will be visible when rendered in the window on the display, the clipped image data representing a spatial portion of the single complete image ~~when rendered in the display;~~

computer readable code configured to cause said server to transmit said clipped image data via a computer network without conversion to a receiver on a client; and

computer readable code configured to cause said receiver to scale said clipped image data for display.

12. (Currently amended) The computer program product of Claim 11, wherein
5 said computer readable code configured to cause said server to clip said image data further comprises:

computer readable code configured to cause said server to obtain a cliplist specifying at least one clipping region that will be visible when rendered in the window on the display, the at least one clipping region defining a spatial portion of the single
10 complete image ~~having the horizontal extent and the vertical extent~~; and

computer readable code configured to cause said server to map said at least one clipping region to said image data to determine said clipped image data.

13. (Previously amended) The computer program product of Claim 12,
15 wherein said computer readable code configured to cause said server to map comprises:

computer readable code configured to cause said server to determine a nearest pixel in said image data to a location in said at least one clipping region.

14. (Previously amended) The computer program product of Claim 13,
20 wherein said computer readable code configured to cause said server to determine a nearest pixel determines a Euclidean distance.

15. (Previously amended) The computer program product of Claim 13,
wherein said clipping region comprises a rectangle and said location comprises a corner
25 of said rectangle.

16. (Previously amended) The computer program product of Claim 13,
wherein said clipped image data are further compressed, wherein said clipped and
compressed image data comprises one or more subsampled chroma components and one
5 or more differentiated and quantized luma components, and wherein said computer
readable code configured to cause said server to determine said nearest pixel further
comprises:

computer readable code configured to cause said server to determine a plurality of
pixels that comprise samples from said one or more subsampled chroma components and
10 values from said one or more differentiated and quantized luma components; and

computer readable code configured to cause said server to determine said nearest
pixel from said plurality of pixels.

17. (Previously amended) The computer program product of Claim 12,
15 wherein said at least one clipping region comprises a plurality of clipping regions, and
wherein said computer readable code configured to cause said server to map comprises
computer readable code configured to cause said server to map said plurality of clipping
regions to a plurality of regions of image data.

20 18. (Previously amended) The computer program product of Claim 17,
wherein said computer readable code configured to cause said server to transmit
comprises computer readable code configured to cause said server to individually
transmit said plurality of regions of image data.

19. (Previously amended) The computer program product of Claim 17, wherein said computer readable code configured to cause said receiver to scale comprises computer readable code configured to cause said receiver to independently scale up said plurality of regions of image data to fill respective regions of a display.

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20. (Previously amended) The computer program product of Claim 19, wherein said computer readable code configured to cause said receiver to independently scale said plurality of regions of image data comprises computer readable code configured to cause said receiver to apply independent scale factors that reduce scaling
10 along a horizontal axis and increase scaling along a vertical axis.

21. (Previously amended) An apparatus comprising:

a network;

a thin client;

15 a server configured to obtain image data and transmit clipped image data over said network; and

a receiver on said thin client configured to receive said clipped image data without conversion over said network, said receiver further configured to scale said clipped image data for display.

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22. (Original) The apparatus of Claim 21, further comprising a clip-list comprising at least one clipping region, wherein said server is configured to map said at least one clipping region to said image data to obtain said clipped image data.

23. (Original) The apparatus of Claim 22, wherein said server is configured to determine a nearest pixel in said image data to a location in said at least one clipping region.

5 24. (Original) The apparatus of Claim 23, wherein said server is configured to determine said nearest pixel based upon a Euclidean distance.

25. (Original) The apparatus of Claim 23, wherein said at least one clipping region comprises a rectangle and said location comprises a corner of said rectangle.

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26. (Previously amended) The apparatus of Claim 23, wherein said clipped image data are further compressed, wherein said clipped and compressed image data comprises at least one subsampled chroma component and at least one differentiated and quantized luma components, and wherein said server is configured to determine said
15 nearest pixel from a plurality of pixels that comprise samples from said at least one subsampled chroma component and values from said at least one differentiated and quantized luma component.

27. (Original) The apparatus of Claim 22, wherein said server is configured to
20 map a plurality of clipping regions to a plurality of regions of image data.

28. (Original) The apparatus of Claim 27, wherein said server is configured to individually transmit said plurality of regions of image data to said receiver.

29. (Previously amended) The apparatus of Claim 27, wherein said receiver is configured to independently scale up said plurality of regions of image data to fill respective regions of a display.

5 30. (Previously amended) The apparatus of Claim 29, wherein said receiver is configured to apply independent scale factors to said regions of image data and wherein said scale factors reduce scaling along a horizontal axis and increase scaling along a vertical axis.

10 31.-33. (Cancelled).

34. (Currently amended) An apparatus comprising:

means on a server for obtaining image data, the image data defining a single complete image ~~having a horizontal extent and a vertical extent when~~ to be rendered in a
15 window on a display;

means on a server for clipping said image data to obtain clipped image data that will be visible when rendered in the window on the display, the clipped image data representing a spatial portion of the single complete image ~~when rendered in the display~~;

means for transmitting said clipped image data via a computer network from a
20 transmitter on said server without conversion to a receiver on a thin client; and

means, at said receiver, for scaling said clipped image data for display.

35. (Previously amended) The method of Claim 1, wherein said client is a thin client computer.

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36. (Previously amended) The method of Claim 1, wherein said computer network is a shared network.

37. (Previously added) The method of Claim 36, wherein said shared network
5 is a low bandwidth network.

38. (Previously amended) The computer program product of Claim 11, wherein said client is a thin client computer.

10 39. (Previously amended) The computer program product of Claim 11, wherein said computer network is a shared network.

40. (Previously added) The computer program product of Claim 39, wherein said shared network is a low bandwidth network.

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41. (Previously added) The apparatus of Claim 21, wherein said network is a shared, low bandwidth network.

42. (Previously amended) The apparatus of Claim 34, wherein said computer
20 network is a shared, low bandwidth network.

43. (Previously amended) The apparatus of Claim 42, wherein said computer network is a digital network.

44. (Previously added) The method of Claim 36, wherein said computer network is a digital network.

45. (Previously added) The method of Claim 40, wherein said computer
5 network is a digital network.

46. (Previously added) The apparatus of Claim 41, wherein said network is a digital network.

10 47. (Previously added) The apparatus of Claim 21, wherein said thin client provides a network interface to a user and wherein said server provides a plurality of computational services removed from said thin client to said user.

48. (Previously added) The apparatus of Claim 47, wherein said plurality of
15 computational services comprise a computational power and a state maintenance for said thin client.

49. (Previously added) The apparatus of Claim 48, wherein said thin client is a stateless device.

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50. (Previously added) The apparatus of Claim 21, wherein said image data is clipped only at said server and said clipped image data is scaled only at said thin client in order to provide greater image data transmission efficiency from said server to said thin client via said network.

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51. (Previously added) The apparatus of Claim 21, further comprising a clip-list identifying visible region displayed on the client, wherein said server is configured to obtain a copy of said clip-list and wherein said copy of said clip-list residing on said server is used by said server to obtain said clipped image data from said obtained image data.